June 17, 2021

Via Electronic Filing

Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Re: *Use of Spectrum Bands Above 24 GHz for Mobile Services* (GN Docket No. 14-177); *Texas Instruments Incorporated Request for Waiver of Section 15.255(c)(3) for Short Range Interactive Motion Sensing Devices* (Docket TBA)*; Faurecia Clarion Electronics North America Petition for Declaratory Ruling and Request for Waiver of Section 15.255(c)(3) for Interactive Motion Sensing Devices* (Docket TBA)*; Husqvarna AB Request for Waiver of Section 15.255 for Collision Avoidance Radar* (Docket TBA)*; Acconeer AB Request for Waiver of Section 15.255(c)(3) for Vehicle Radar Operation in the 57-64 GHz Band* (ET Docket No. 21-48)*; IEE Sensing Inc. Request for Waiver of Sections 15.255(c)(2) and (c)(3) for Vehicle Radar Operation in the Frequency Band 60-64 GHz* (ET Docket No. 20-435)*; Brose North America Inc. Request for Waiver of Section 15.255(c)(3) for Vehicle Radar Operation in the Frequency Band 57-64 GHz* (ET Docket No. 20-434)*; Tesla Inc. Request for Waiver of Sections 15.255(a)(2) and(c)(3) for Short-Range Interactive Motion Sensors for Vehicle Radar Operation in the Frequency Band 60-64 GHz* (ET Docket No. 20-264)*; Infineon Technologies Americas Corp. Request for Waiver of Sections 15.255(a)(2) and(c)(3) for Short-Range Interactive Motion Sensors for In-Vehicle Radar Operation in the Frequency Band 57-64 GHz* (ET Docket No. 20-263)*; Valeo North America Inc. Request for Waiver of Sections 15.255(a)(2) and(c)(3) for In-Vehicle Radar Operation in the Frequency Band 57-64 GHz* (ET Docket No. 20-121)*; Vayyar Imaging Ltd. Request for Waiver of Section 15.255(c)(3) for Radars Used for Interactive Motion Sensing in the Frequency Band 57-64 GHz* (ET Docket No. 20-15)

Dear Ms. Dortch:

The 60 GHz Coexistence Study Group (the 60CSG) is composed of members that share a strong interest in reasonable coexistence among all unlicensed technologies using or seeking to use 60 GHz spectrum frequencies.[1] Over the past two years, the 60CSG has met routinely to study modes of coexistence between radar and communication technologies in the 60 GHz unlicensed spectrum band, and to work with regulatory bodies and other constituencies to encourage expanded uses of the band. Members of the 60CSG agree that amendment of the FCC's technical rules is needed to allow for technological innovation while ensuring reasonable coexistence of various unlicensed technologies operating in 60 GHz frequencies. To that end, the 60CSG again encourages the Commission to commence a comprehensive rulemaking proceeding to (i) generally promote innovative communications and radar applications, services,

[1]The 60CSG is a gathering place for 60 GHz WiGig and radar stakeholders, including Acconeer, Continental, Facebook, Google, IEE Sensing, Infineon, Intel, Qualcomm, Peraso, Samsung, Socionext, Texas Instruments, and Vayyar.

and devices in the 60 GHz band, and (ii) in particular, address the range of technical and policy issues necessary to preserve reasonable coexistence between radars and field disturbance sensors, which require higher power levels than Part 15 currently permits in the U.S., and other users of 60 GHz spectrum.[2]

To date, the 60CSG has not achieved consensus on a recommended regulatory approach to achieve coexistence among the diverse operations in the 60 GHz band. However, conversations and analyses are continuing, and the 60CSG has discussed several potential frameworks that may be of interest to the Commission as it considers a future rulemaking.

- *Framework 1:* Establish a single rule for radar operations in the 57-64 GHz portion of the 60 GHz band. The rule would specify parameters for peak EIRP and peak conducted power, with potential inclusion of limits on duty cycle. Some members of the 60CSG also suggested including a maximum Ton value (longest contiguous radar transmission) and/or a minimum Toff (minimum time between radar transmissions such that the gap is considered "off" from the perspective of duty cycle calculation).

- *Framework 2:* An alternative framework discussed by the 60CSG would establish a rule based on average power and/or average PSD limits. Conceptually, this framework would be based on the ETSI EN 305 550 standard that forms the basis of European and Australian regulations. Discussions in the 60CSG have noted that a peak power constraint could potentially be considered to limit power "burstiness," whereas an average power constraint approach would allow for trading off higher peak power with duty cycle.

- *Framework 3:* Another framework would take a channelization approach to radars in the 60 GHz band. Lower bandwidth radars could be aligned with existing IEEE 802.11 WiGig channels at the bottom of 57-64 GHz: 2.4 GHz radar in 57.0 - 59.4 GHz (WiGig channel 1), 4.5 GHz radar in 57.0 - 61.56 GHz (WiGig channels 1 + 2), and 7 GHz radar in 57.0 – 64.0 GHz (WiGig channels 1 + 2 + 3). Different regulations (e.g., radar power and/or duty cycle) would apply to different radar bandwidths, with the principle of more flexible rules for narrower band radars (i.e., 2.4 GHz rules > 4.5 GHz rules > 7 GHz rules) to encourage channelization and use of only the required radar bandwidth. A further option could be added for radars that employ a contention-based protocol like listen before talk (LBT) or detect-and-avoid (DAA), to enable such radars more flexible operation.

- *Framework 4*: The 60CSG has discussed whether the Commission's rules should reflect different categories of technologies that operate in the 60 GHz band as a means of setting parameters to achieve reasonable coexistence. For example, the rules could allow for different operating parameters when operating in a vehicle, indoors, or outdoors, or between implementations that are fixed, mobile, or portable.

The 60 CSG also noted that in adopting rules, the Commission should consider the operational differences between radar systems being developed for or currently operating in the 60 GHz band (e.g., FMCW versus pulse radar, and single-antenna radars versus array/beamforming systems).

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[2] *See, e.g.*, Letter from Alan Norman, Facebook, Inc., *et al.*, to Marlene Dortch, Sec'y, FCC, in ET Docket No. 20-121, *et al.*, at 2 (filed July 1, 2020) (letter co-signed by 60CSG members companies "encourag[ing] the Commission to commence a comprehensive rulemaking proceeding" to update the rules for the 60 GHz band).

Members of the 60CSG look forward to the opportunity to provide further insights to the FCC in a rulemaking proceeding.

Sincerely,

Acconeer AB, Continental Automotive GmbH, Facebook, Inc., Google LLC, IEE Sensing Inc., Infineon Technologies, Intel Corporation, Qualcomm Incorporated, Peraso Technologies, Inc., Samsung Electronics America, Socionext America, Texas Instruments, Inc., and Vayyar Imaging Ltd.